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Combat Crew

strategic air command

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Combat Crew

Magazine of the Strategic Air Command - 32nd Year of Publication

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ON THE COVER

Help make flight safety week a team effort.

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DEPARTMENT OF THE AIR FORCE

FLYING SAFETY WEEK..
Safety Awareness

> As long as airplanes are flown by human beings we are going to have accidents. Some accidents will be unavoidable. However, by doing everything possible to reduce those caused through human errors, we can keep our accidents down to the minimum. —Gen Curtis E. LeMay

Major Stephen J. Miller
HQ SAC/IGFF

The above thought which appeared in the June 1950 issue of Combat Crew remains valid in safety today. Some might say, if we still have the same problems, then we must not have come very far in the past 32 years.

Not true. SAC's Class A flying mishap rate in 1950 was 43.00 (major mishaps per 100,000 flying hours). In 1981, the SAC rate of 1.15 shows there has been considerable improvement through the years in all operations — still maybe we haven't come as far as we could.

It was in 1951 that the SAC rate went below the Air Force rate — a fact which has continued since.

What happened to decrease SAC's mishap rate? The answer lies in the many programs which have evolved to improve SAC operations. For example, such programs include: strong standardization and quality control programs; dynamic training programs for aircrews and maintenance technicians; extensive operational testing and exercises conducted under coordinated plans; thorough unit evaluations and inspections; and emphasis on system safety and human factors design in the new aircraft acquisitions and modification processes. In addition, safety people have been actively involved in developing these

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USAF
FLYING
SAFETY
WEEK
MAY 17-21

programs.

No one can be complacent or accept a mishap rate, no matter how low it is. The fact there is a rate, above zero, is significant; more important is the ever rising cost of the mishaps which occur. The average dollar loss to the Air Force per Class A mishap in 1950 was about $150,000, whereas today the cost is above $4.2 million per mishap. This loss of valuable resources through mishaps must receive increased attention.

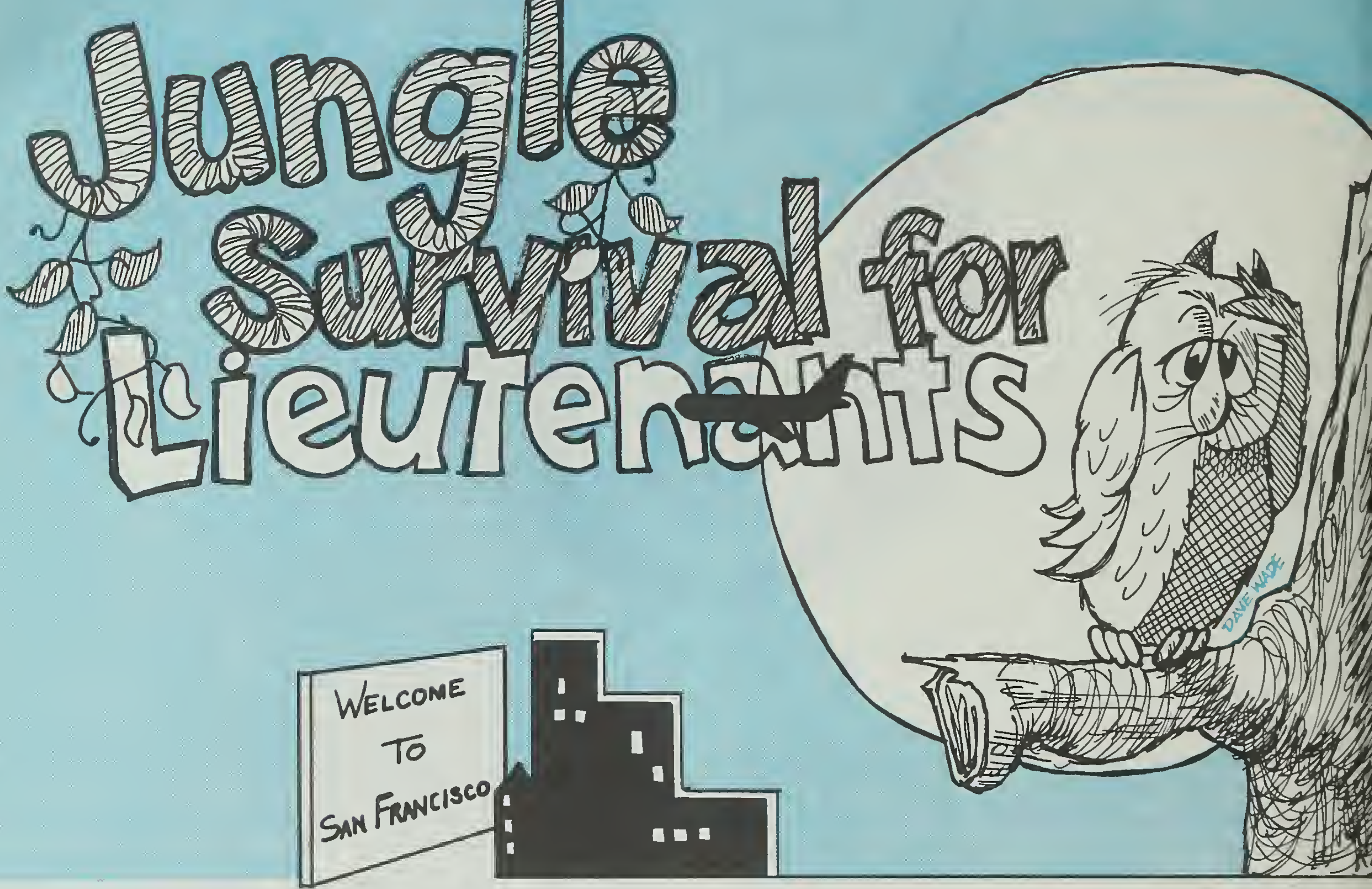
What about unavoidable mishaps? Since 1978 operations error has been identified by mishap boards as causal in a vast majority of SAC's Class A mishaps. Operations error includes such factors as supervision, tech order guidance and direct aircrew actions. In many mishaps the aircrew was not properly prepared to react; or applied wrong procedures or techniques; or was incapable of coping with the developing situation. The high number of avoidable mishaps for the past four years reinforces the need to concentrate efforts toward defining and eliminating root cause factors.

The fact remains that mishaps experienced in SAC have the same root causes which have been historically identified. This sets the stage for USAF Flying Safety Week — a time to reflect about safety and help ourselves and SAC to improve on what and how we do things in the flying business.

The USAF Chief of Staff designated 17 - 21 May 1982 as USAF Flying Safety Week. This was done to provide a special week and, thus, a special opportunity for everyone associated with flying to direct their attention to mishap prevention and safety awareness. Your unit has developed various programs designed to give each of you a chance to participate, to be heard, to gain knowledge and to contribute to safety. Your involvement is the essential key to improving safety in SAC operations. It makes no difference what your rank or what your work speciality is — commanders, staffs, supervisors and safety people are looking for your ideas.

If you view your unit's activities during safety week as just more "square filling," you will be missing a real opportunity to improve SAC's operations and maintenance programs. Of course, this effort is not reserved just for flyers or maintenance people. All are welcome to participate — everyone has a part — and everyone's business is safety awareness!

Jungle Survival for Lieutenants



Major Michael P. Altiere
HQ 8AF/DOCP

I just finished an AFROTC assignment and can attest to the tremendous enthusiasm but genuine naivete of some of the new officer volunteers. It's not their fault they learn in a sterile, idealistic, academic, military environment; they're just not exposed to the active duty ***jungle.***

The great concern for each of these new lieutenants is they may lose their enthusiasm and become disillusioned. To prevent this I relate this story about General Curtis LeMay and his early Air Force career. I believe the incident affords one obvious lesson, and another which all second lieutenants share.

In the late thirties, the two branches of service were struggling with airpower. The newly formed Army Air Corps was fighting for practice bombs and a mission in line with their capabilities. Long range bombing was a theory. The primary mission of the Army Air Corps was coastal defense. Budgets were tight and competitive: the Navy wanted ships; the Army wanted tanks; the Army Air Corps wanted planes (B-17's). To prove the potential of high altitude bombing, GHQ Air Force and the Navy engaged in Joint Air Exercise No. 4 or the bombing of the battleship Utah. This was the first test of the experimental B-17.

The exercise occurred over a two day period off the California coast. An aggressor naval force, whose main vessel was the Utah, was to attack the California coast, defended by the Army Air Corps forces (B-17's, B-18's, B-10 and reconnaissance OA-4's, OA-5's and B-18).

The lead B-17 crew was to locate, identify and engage the Utah. Capt Caleb V. Haynes was the AC, and 1Lt Curtis LeMay (an ROTC graduate) was lead navigator. Col Bob Olds, 2d Bomb Group Commander, and BG Frank M. Andrews, GHQ Army Air Force Commander, were accompanying the crew.

Since Lt LeMay was the primary navigator, he felt tremendous pressure when the first day's attempt to locate the Utah was a failure.

Bob Olds came back from the cockpit and looked down at the lieutenant: "Are you sure you know where that boat was supposed to be?" he asked.

LeMay stared back at him and said that he was. He took a celestial sighting that indicated to him that his error could have been no more than a mile or two from the exact location given. To prove that he knew what he was talking about, he told the unsmiling colonel the course to San Francisco and the exact time they would be over it.

Olds said, well, they still had tomorrow morning and then added, "I want the Utah. You'd better find it for me."

Ten minutes before his estimated time of arrival, LeMay went up to the cockpit and stood between Haynes and Olds and waited. With the fog they'd never see the city, but they'd see the glow of its lights, that is, if San Francisco was where it was supposed to be. It was, right on the money. Olds crumpled up the slip of paper LeMay had given him with the ETA and said, "By God, you were right. Then, why didn't we find the Utah?" — From "A Few Great Captains," Double Day & Company.

Later, the navy admitted that they had only missed by one degree. The next day the B-17's went out, found and bombed the Utah with water bombs and literally blew her out of the water. (On December 7, 1941, the Utah was sunk at Pearl Harbor. The reader may draw his own conclusions.)

The obvious lesson for the lieutenant is that he must become an expert in his job. The expertise you, as lieutenants, develop will build confidence and nurture your self-confidence during adversity. Eventually, self-confidence will spread to others and they in turn will develop their own self-confidence. This is the way teamwork grows. Finally, the realization that your crew (team or flight) is composed of proven experts capable of handling any situation becomes the foundation upon which leadership builds.

This anecdote demonstrates a more obscure lesson, overcoming criticism from one's superiors. Initially, one might identify job knowledge or expertise as LeMay's key to success with his superiors. I believe that enthusiasm was that key. In this case, it was not a visible effervescent enthusiasm, but an internal enthusiasm of the spirit — drive. LeMay's drive to prove his ability to navigate was above reproach. His drive was directed at gaining the respect and confidence of his superiors. Adversity of defeat cannot wound or detract from this kind of enthusiasm or drive. Instead, the drive channels energy to engage those obstacles head on.

I hope lieutenants will remain aware of how precious a commodity is their enthusiasm. They should not let anyone try to purge this quality through derision, cynicism, or pessimism. Finally, each one must grow as a professional permitting that enthusiasm to mature and spread to strengthen the officer and the leader.

SEE AND BE SEEN

SMSgt Marshall E. Holman
HQ AFISC/SEFA

USAF aircraft were involved in a high number of near midair collisions from January 1980 to November 1981. In particular, the B-52 experienced a near midair collision (NMAC) rate of 18.6 per 100,000 flying hours. While the B-52 isn't the only aircraft to have a high rate there are obvious problem areas '52 crewmembers should be aware of. (Fig 1)

NEAR MIDAIR COLLISIONS — SAC
JAN 80 — NOV 81

Model B-52	No.	%	Other Aircraft	No.	%
B-52D	9	19	General Aviation	39	83
B-52G	25	53	KC-135	2	4
B-52H	13	28	F-4	2	4
	47		Air Carrier	1	2
			UH-1	1	2
			A-4	1	2
			Hang Glider	1	2
				47	

Fig. 1

A NMAC is defined in AFR 127-3 as "an unplanned event in which the aircrew took abrupt evasive action to avoid a midair collision, or would have taken evasive action if time had permitted." No attempt is made to incorporate a precise miss distance into the definition; however, less than standard VFR separation, 500 feet, is most often used to justify an incident.

The information contained in each NMAC report is encoded and entered into the AFISC automated data file under one of 17 different Hazardous Air Traffic Report (HATR) classifications. These vary from personnel error to system deficiencies.

During the analysis period mentioned above, SAC experienced 47 B-52 near misses. These were entered as 40 failures to see and avoid; three FAA controller errors; two non USAF pilot errors; and one each USAF controller error and system deficiency. Some examples include:

Controller Error

- One of the four incidents caused by controller error involved an air carrier in positive controlled air space (PCA). The ARTCC controller became confused about the positions of two B-52's during cell entry resulting in a near miss between one of the B-52's and a Western Airline 727.

• Another incident occurred while in the PCA at FL 320. During a night refueling rendezvous (MARSA not declared), the lack of positive control by the ARTCC, compounded by poor radio communications and improper aircrew coordination, caused a KC-135 to pass directly under the B-52.

• A third incident involving controller error occurred within an airport traffic area (ATA) and resulted from the lack of traffic coordination between two control towers. The departing B-52 had to take evasive action to miss a light aircraft that was being controlled by an adjacent airfield's tower.

• The fourth controller error also occurred within an airport traffic area. It involved a B-52 on a monitored ILS final and a succeeding KC-135 conducting a PAR. Because of decreasing separation between the B-52 and a preceding aircraft, tower directed a breakout to the left for the B-52. The radar controller erroneously issued a heading of 060° instead of 120° which took the '52 back toward the final approach course and placed it in conflict with the KC-135. The KC-135 passed 300 to 500 feet beneath the B-52 with the aid of visual separation by both pilots.

Non USAF Pilot Errors

One of the non USAF pilot errors occurred when a small aircraft was flown through an ATA without ATC clearance. The aircraft missed a departing B-52 by less than 500 feet. The other incident occurred when an unidentified A-4 aircraft, operating in a PCA without a clearance, passed directly over the tail of the '52. ARTCC replotted the '52 track and no targets, either primary or secondary, could be found. The B-52 crew did not have sufficient time from the initial sighting, one to two seconds, to take any evasive action.

System Deficiency

The one system deficiency report involved a B-52 and an RF-4C on a military training route. It resulted when the RF-4C training unit was not aware that a particular IR was active during a SAC ORI mission. They had not been addressed on the correspondence notifying units of the route's usage. Since the incident, the unit has been added to the addressee list.

Failure to See and Avoid

See and avoid is a visual procedure wherein pilots of aircraft in visual meteorlogical conditions, regardless of type flight plan, are charged with the responsibility to observe the presence of other aircraft and to maneuver their aircraft as required to avoid the other aircraft. Right of way rules are contained in FAR, Part 91.

Individual bases have taken several steps to make the general aviation community aware of low level routes. For example, Air Force representatives have visited local civilian airports and provided copies of charts depicting the route structure and hours of use. Bases have also prepared brochures describing military operations and distributed copies to civil airports within the route area. Many bases have conducted fly-ins at which general aviation pilots are invited to fly into the base and receive briefings, as well as a tour of operations. The idea is to promote a civilian understanding of military operations and to publicize the low level training routes. Such promotions are beneficial and should continue.

B-52 aircraft were involved in 32 near misses with other aircraft while at low level. An additional near miss involved a hang glider. While only an isolated incident, it still might be interesting to note that the near miss with the hang glider, a motorized version, occurred at approximately 2500 feet AGL. Aircrews flying IR 499 in the vicinity of Green River or Big Piney Municipal Airport, Wyoming, may want to keep a closer lookout for this type of recreational activity. The numerous mountains, plateaus and valleys which accent the area are extremely favorable for hang glider operations.

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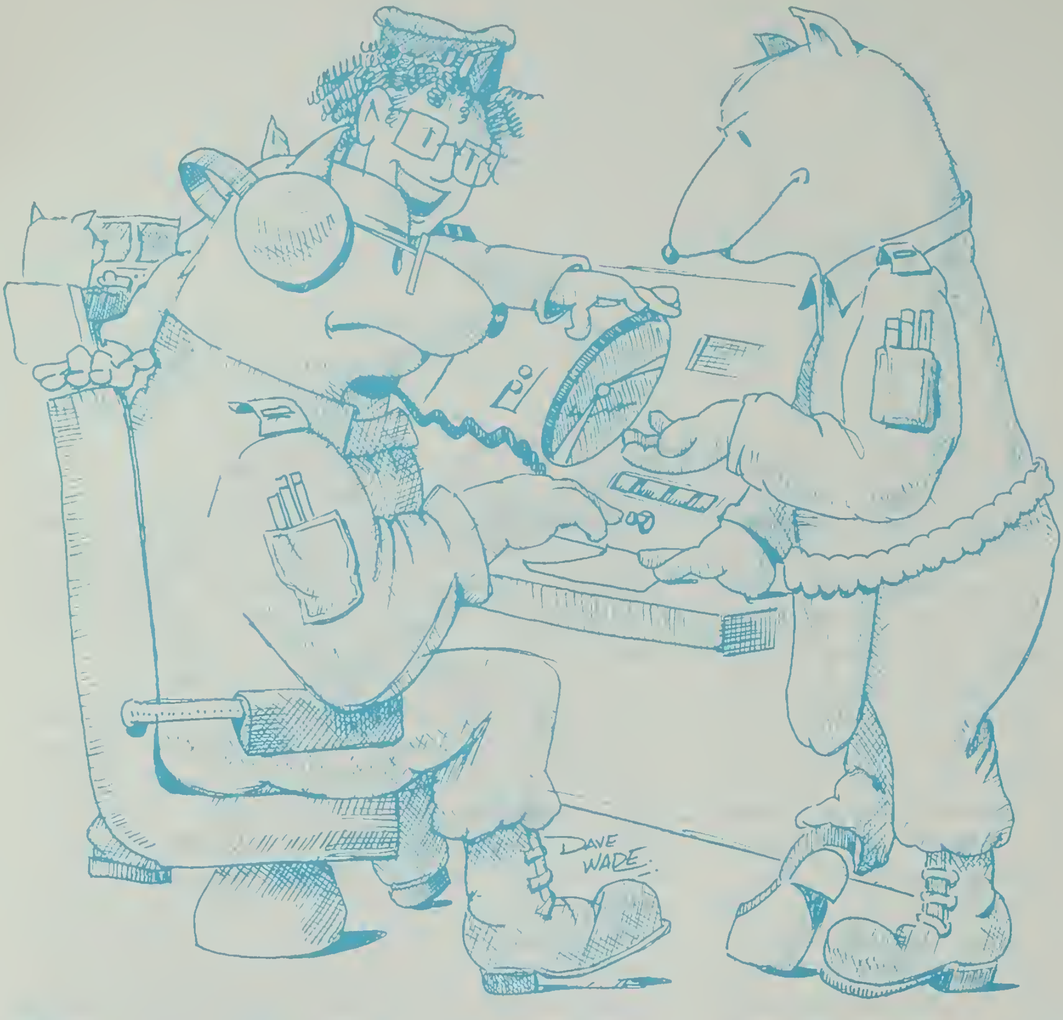


Capt Goldielocks and the 3 Bears

Capt Thomas D. Brown, Jr.
340BMS, Blytheville AFB

Once upon a time at a SAC base far, far from anywhere, there was a very conscientious crew member anxiously preparing for his first mission as an instructor. His name was Capt Goldielocks and while he had little doubt about his own ability in the aircraft, he still had apprehensions about this first mission in the instructor seat. Years of experience and hard work learning to be an instructor would help him, but he just wasn't sure how he was going to act. He knew how to handle the aircraft, but he just wasn't sure how to handle the student.

With this on his mind, he had a rough time sleeping. He tossed and turned all night long. Sometime during the night he had a dream. In that dream he was on a B-52, but he wasn't the instructor. In fact, he wasn't really sure what he was. He could see and hear everything that was happening on the plane, but nobody could see or hear him. There was a full crew plus an instructor in each of the 3 crew compartments. He decided to go downstairs and watch the instructor radar navigator. Maybe he could learn something from him.

When he got downstairs, he was shocked! The IRN was a big bear! You know, one of those animals with fur and claws that eats honey; only this bear was wearing a flight suit complete with spit shined combat boots. If that wasn't enough, he had a name tag which read: "Papa Bear." But the most startling thing about the bear was his face. He looked just like Capt Goldielocks. He didn't have to watch long to realize that Papa Bear knew his stuff. In fact, he never missed a chance to display his knowledge to the nav team. He was really demanding a lot from them, breathing down their necks all day long; never once did he budge from his position between the two ejection seats. Every time the nav team even thought about making a mistake, he was right there to correct them. As a matter of fact, he was hammering them on every nit-picking detail.

Goldielocks had been so involved with watching Papa Bear that he hadn't noticed the nav team. The navigator was visibly shaken. Every time Papa Bear would make even the slightest movement, the nav would jump. It was almost as if he was more worried about Papa Bear than the mission. As the mission progressed, the nav was making more and more "dumb" mistakes. This really upset Papa Bear. It was obvious that the RN was not shaken by Papa Bear, but, if looks could kill, Papa Bear would be a rug in front of someone's fireplace. The RN was going out of his way to infuriate Papa Bear. Capt Goldielocks had seen enough! Papa Bear's only concern was with proving his superiority and the nav team's inferiority. He was not a bit concerned with helping them! It was time to go upstairs and observe the defense instructor. Maybe he would have some concern with helping his student.

The DI was also a bear, and he too looked just like Capt Goldielocks. He was not quite as large as Papa Bear. In fact, he wasn't even a he. This bear had a name tag that read: "Mama Bear." Mama Bear was much more understanding than Papa Bear. She never once raised her voice in anger. She also remained between the 2 ejection seats the entire mission. She was there to help the EW, not to hammer him. Mama Bear was very patient and explained every step of every checklist to the EW. She even did some of his calibrations for him, just to show him how.

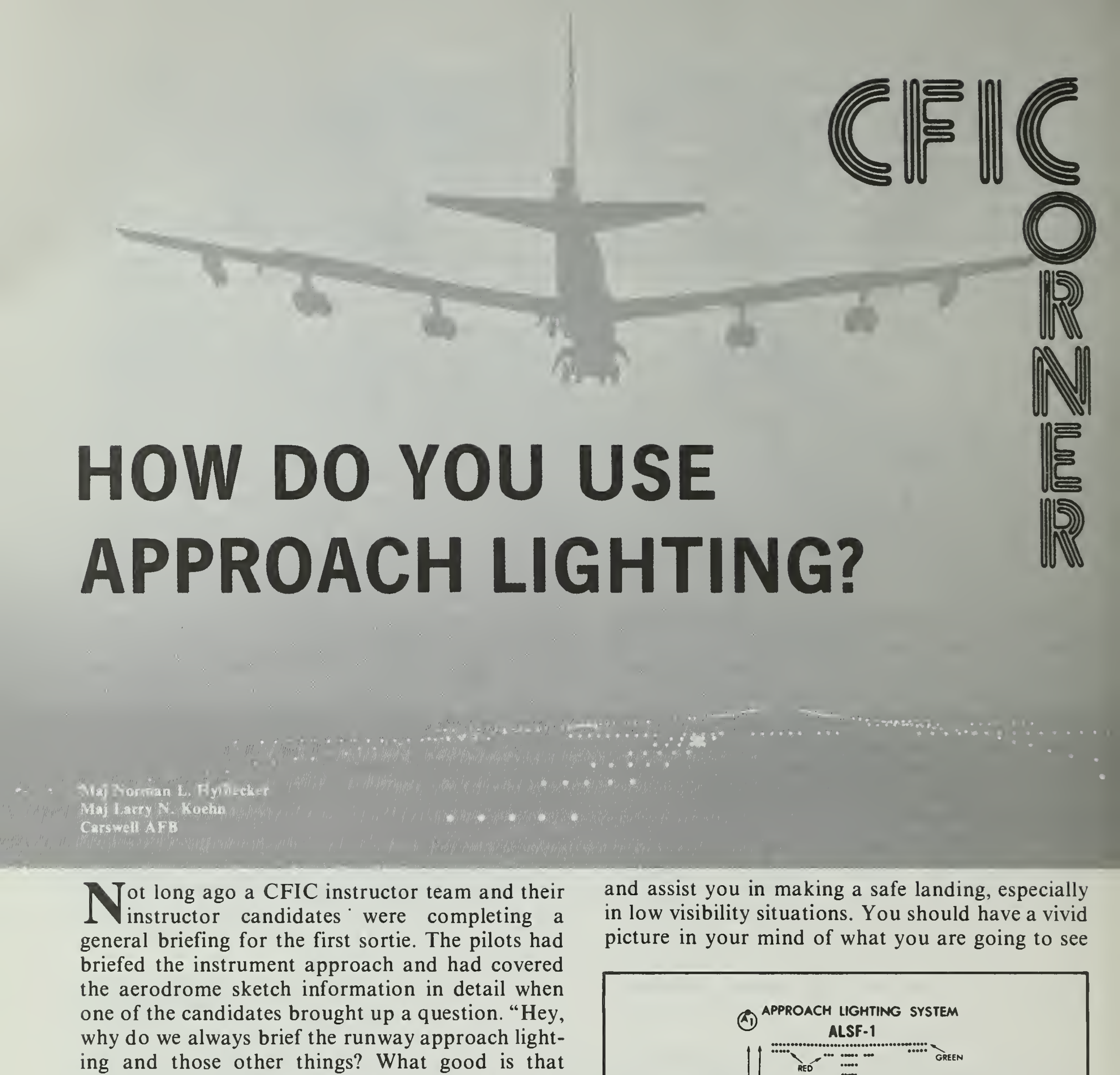
The EW was very relaxed and certainly was not afraid of Mama Bear. Things were really going smooth until Mama Bear had to go to the bathroom. Capt Goldielocks noticed a radical change in the EW the second she left. He just seemed lost. He kept looking around for support from Mama Bear. He was afraid to do anything on his own. Capt Goldielocks had seen enough! Mama Bear was certainly concerned with helping the EW, but, she was so protective and undemanding that she didn't allow the EW to do the job himself. It was time to observe the instructor pilot. Maybe he would allow the pilot team to do the job themselves.

Of course, the instructor pilot was also a bear who looked just like Capt Goldielocks. This bear was even smaller than Mama Bear. His name tag read: "Baby Bear." Baby Bear was not as mature as the other 2 bears. He sat back in the IP seat and didn't seem to pay much attention to the pilot team. Sometimes it even seemed like he was asleep. Other times he read a magazine, or at least looked at the pictures. He pulled a few pranks on the pilot team, like pulling the circuit breaker to their seats. He talked about some of his antics at the last squadron party. When the pilot team did have a question or a problem, he either told them not to worry about it because it wasn't important or he told them to look it up! Baby Bear seemed to be having a good time.

The pilot team wasn't having such a good time. They seemed frustrated. The pilot just figured he was a smart aleck and wished he would go back to sleep. The copilot had some questions he wanted to ask him, but didn't because he knew he wouldn't get a straight answer. Capt Goldielocks had seen enough. Baby Bear did sit back and let the pilot team do their job. But, he totally ignored them when he did. When he did pay attention to them, all he did was disrupt their concentration with his stories and pranks. Capt Goldielocks went back to the bunk and went to sleep.

BZZ, BZZ, BZZ, Capt Goldielocks awoke with a start. The alarm was going off! As he reached to shut it off, he noticed something in his hand. There were 3 name tags. They read: "Papa Bear, Mama Bear, and Baby Bear." "That's it!, he said. He realized he must deal with each student individually. He must borrow a little from each of the three bears and be careful not to turn into any one of them.

He must be observant and demanding but not to the extreme that Papa Bear was. He must add some of the patience and understanding of Mama Bear. He must sit back and allow the students to do as much as they can without his help and even add a little humor like Baby Bear. But most of all, he must remember that each student has different needs and meeting those needs is his job as an instructor. He was now ready for his first mission in the instructor seat. And they all flew happily ever after.



CFIC CORNER

HOW DO YOU USE APPROACH LIGHTING?

Maj Norman L. Hyttecker
Maj Larry N. Koehn
Carswell AFB

Not long ago a CFIC instructor team and their instructor candidates were completing a general briefing for the first sortie. The pilots had briefed the instrument approach and had covered the aerodrome sketch information in detail when one of the candidates brought up a question. "Hey, why do we always brief the runway approach lighting and those other things? What good is that information anyway"? The other candidates agreed that SACR 50-12 and AFM 51-37 established the need to review the aerodrome information but were not exactly sure of the reason. Briefing the approach lighting should be more than an exercise to "fill a square". Just saying ". . . and the field is equipped with A-1 Standard Lighting with VASI's . . ." is a waste of time if the words really do not mean much to you.

The U.S. Standard (ALSF-1) lighting system is probably the most common system found at SAC installations, yet few crew members can describe this system from memory. A thorough knowledge of the runway's lighting system could aid your judgement and assist you in making a safe landing, especially in low visibility situations. You should have a vivid picture in your mind of what you are going to see

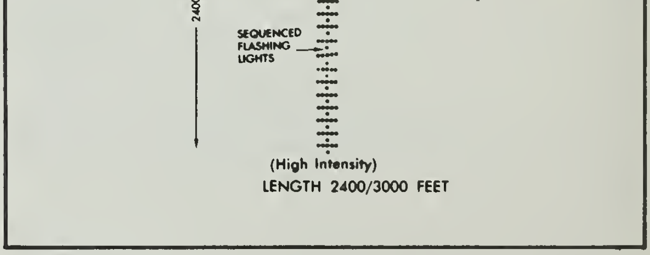


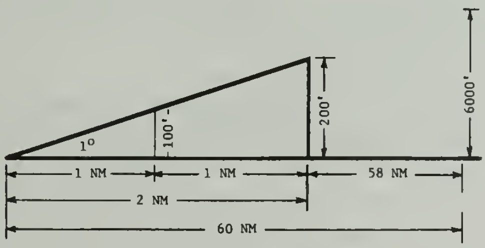
Figure 1. U.S. Standard Lighting System (ALSF-1).

when you pick up the runway environment at decision height. If you do not fully understand or know what you are seeing, you may misidentify the runway environment and land short of the runway. Let's review some interesting points which are worthy of consideration.

ALSF-1 lighting system is typically 2,400 to 3,000 feet long, and extends from the runway threshold. It does not start at the end of the overrun. Its primary components (Figure 1) include a horizontal row of green runway threshold lights at the runway threshold, and an extended row of white lights to provide an extended runway centerline. There are two horizontal rows of segmented lights. The horizontal row of red lights identifies the end of the overrun and is adjacent to the green threshold lights. The horizontal row of white lights is approximately 1,000 feet from the approach end of the runway and depict the approach end of the overrun. Both of these horizontal rows of lights can be used to provide roll guidance, and if they do not appear level in relation to the windscreen during the approach, the aircraft is in a bank.

There are several variations of the ALSF-1 lighting system. Generally, when the ALSF-1 is equipped with sequenced flashing lights, they begin approximately 3,000 feet from the end of the runway itself but may stop at the white roll bar.

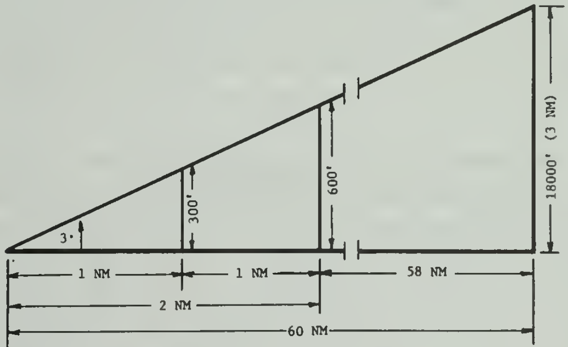
Although the approach lights do not provide vertical guidance (VASI's are not part of the ALSF-1 lighting system), you can determine how high the aircraft should be by cross checking the altimeter as you pass over the various approach lighting segments. This is done by applying 60 to 1 rule in the vertical plane.



**Note: Illustrations not drawn to scale.

Figure 2. One degree azimuth or elevation change at one nautical mile will displace an aircraft 100 feet.**

February, 1982's issue of ***Combat Crew*** offered a detailed article on the 60 to 1 rule. Briefly, the 60 to 1 rule states that one degree of arc is approximately 6,000 feet or one nautical mile wide at the 60NM point of a circle. It is often used to determine arc to radial intercepts but we also use the same relationship to determine descent and climb gradients or our height above the ground at any distance. This is accomplished by rotating the circle from the horizontal plane to the vertical plane (Figure 2).



**Note: Illustrations not drawn to scale.

Figure 3. Three degree azimuth or elevation change at one nautical mile will displace an aircraft 300 feet.**

If an instrument approach uses a three degree glideslope angle (gradient), this equates to 300 feet of altitude per nautical mile (Figure 3). Note that

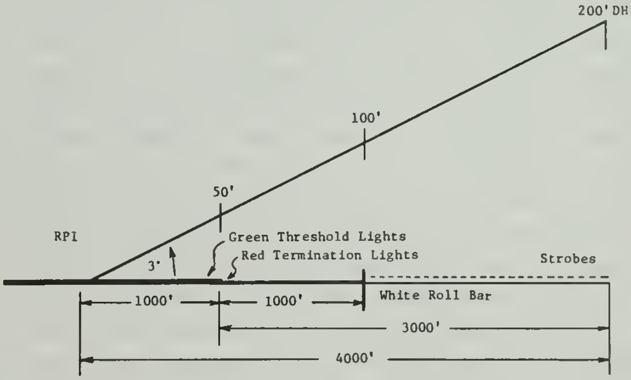


Figure 4. Runway Point of Intercept (RPI) and aircraft altitude over various approach lighting segments.**

CFIC

Continued from page 11

in Figure 4, the three degree gradient is measured from the runway point of intercept which is approximately 1,000 feet from the runway's threshold. Now that we have reviewed the basic information, how can we utilize it to our advantage? Let's use a hypothetical situation and illustration in Figure 4.

You are flying a precision approach with a three degree gradient to a runway equipped with U.S. Standard lighting, sequenced flashing lights, and VASI's. At best, the weather is marginal; indefinite obscured, ½ mile with fog and rain, RVR 2400. As you approach decision height, 200 feet HAT, your copilot says, "I've got the strobes"! Hopefully, you are stabilized on the approach with the power and pitch set and the aircraft in trim. You should feel confident that you are fairly well set up to execute the landing. At 200 feet HAT on a three degree glideslope, you should be 2/3 mile or approximately 4,000 feet from the RPI (3,000 feet of approach lights plus 1,000 feet of runway to the RPI). If you are approaching the decision height and it appears that the approach lights are still out ahead of you, consider the possibility that your descent rate is excessive and you are low on glideslope. Knowing that there is a white roll bar at the approach end of the overrun and a red roll bar at the threshold end of the overrun, do not make the error of thinking you are seeing the VASI's (red lights over white lights). As you cross the overrun's white roll bar (2,000 feet from the RPI), your aircraft should be approximately 100 feet above the runway. At the threshold's red roll bar (end of the overrun and 1,000 feet from the RPI), your height should be approximately 50 feet or threshold crossing height. Throughout the descent from DH, avoid the tendency to "duck under" the glideslope. The "duck under" maneuver may quite possibly be your worst enemy when transitioning from instrument conditions to marginal visual conditions! "Duck under" will produce high sink rates and thrust/lift changes at a critical time. Realize that in poor visibility, especially when the runway is not clearly visible, there are insufficient visual cues available to determine vertical position or vertical motion! Studies indicate that as pilots suddenly acquire the runway environment, they get the illusion that they are high on the glideslope. There is a natural tendency to abandon the established glidepath, ignore flight instruments, radar controller's instructions, VASI indications, and attempt to rely solely on poor visual cues and "seat of the pants" techniques.

Our discussion has focused primarily on the ALSF-1 lighting system, but if you fly into non-Air Force or civilian airports you probably will have a modified lighting system. Many of these runways are equipped with Medium Intensity (MALS) or Simplified Short (SSALS) Approach Lighting Systems shown in Figure 5. The MALS and SSALS systems are shorter (1,400 feet), more narrow, and cheaper to operate than the ALSF-1 system. The pilot who is used to the ALSF-2 system, may have the visual illusion of being too high on the glideslope at decision height when using these systems.

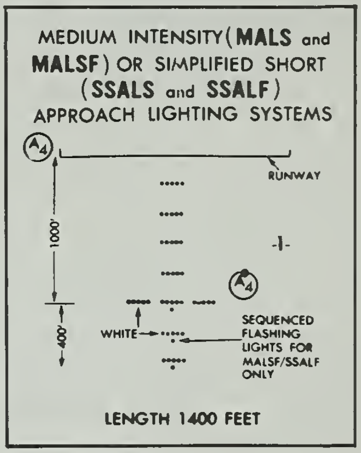

MEDIUM INTENSITY(MALS and MALSF) OR SIMPLIFIED SHORT (SSALS and SSALF) APPROACH LIGHTING SYSTEMS
A4
RUNWAY
1000'
-I-
A4
400'
WHITE
SEQUENCED FLASHING LIGHTS FOR MALSF/SSALF ONLY
LENGTH 1400 FEET

Figure 5. Medium Intensity (MALS) and Simplified Short (SSALS) Lighting Systems.

There is not a formal course on approach lighting systems in UPT or CCTS, yet pilots are expected to safely land using a variety of approach lighting systems. We cannot discuss all the systems available, but AFM 55-9, Terminal Instrument Procedures, Appendix 5, contains detailed descriptions and pictorial sketches of lighting systems found at airfields around the world. A careful analysis of approach lighting is mandatory if the pilot expects to correctly and safely identify the landing environment in low visibility.

Use some mission planning time to study the approach lighting, and know what you are going to see when you finally break out at minimums. Apply the 60 to 1 rule and determine what your altimeter should read as you cross the approach lighting segments. A few minutes of preparation may prevent a fatal error in judgement. If you have performed a careful analysis of the approach, and understand the information we have discussed, you should be able to properly utilize what you are seeing, and combat the "duck under" tendency. Knowing what to expect through preparation is all part of what must be done to **Fly the Aircraft** to a good, safe landing.

SAC ICBM TRAINING CONFERENCE

Major Ronald G. Forrester
4315CCTS/CMM

The first SAC ICBM Training Conference was hosted by the 4315th CCTS, Missile Training Branch at Vandenberg AFB, last February. Never before had operations experts gathered at one location to discuss ICBM training philosophies, policies and programs. Each operational missile wing, the 3901st SMES, 1st STRAD, NAFs, Hq SAC and Hq USAF were also represented. A mixture of formal seminars, guest lecturers, and working groups highlighted the activities.

The purpose: to accomplish a comprehensive review of all phases of ICBM training as recommended by the members of the SAC ICBM Safety and Operations Review Board. There were no restrictions placed on agenda items except that error criteria and assessment were not topics for discussion. Specific programs reviewed were initial qualification, recurring, and staff officer training. Conferees were challenged to examine in detail these three training programs to determine if they provided the most appropriate type and amount of instruction possible. Was there a better way to train missile crew members? That question was at the heart of each working group's deliberations during the conference.

The mix of conferees was a critical consideration. Strategic missile wings sent one experienced squadron commander or operations officer, the DOT or senior instructor MCCC, and the wing instructional systems manager. The conference allowed squadron commanders and operations officers an opportunity to be involved in developing the philosophy upon which their crew members' training programs are based. The three senior squadron commanders chaired the working groups. Two representatives from 15th Air Force and one from 8th Air Force attended. Four staff officers from Hq SAC/DOMM, one staff officer from Hq SAC/XOXO and one staff officer from Hq SAC/DOCCE represented the command. Colonel Neighbors, Hq USAF/XOOTS, also attended. Maximum participation insured the stated objectives were met and the greatest benefits for the command were realized.

To facilitate a meaningful exchange of ideas, each missile wing submitted discussion questions and topics which became the agenda items for the three working groups. Several agenda items were selected for more than one working group. For example, agenda items identified for both the Initial Qualification Training (IQT) and Recurring Working Groups were: improve training of section 4 checklists; improve training of security procedures; how can MPT performance be correlated to written tests; with the redundant safety features built into the system, are comprehensive performance objective (CPO) times realistic in terms of crew reactions; does scenario training/evaluation tell us what we want to know about crew member knowledge; and the quality and timeliness of technical order changes. These agenda items are representative and reflect the type of questions and subjects addressed during the conference. Weeks before the conference, each missile wing received a list of agenda items for each working group. Additionally, course control documents (Plan of Instruction, CPO catalogues) and other reference materials were mailed to the chairpersons and conferees. These documents insured each conferee had the necessary materials to prepare responses to the agenda items and formu-

Continued on page 20

Clearing the Air

Capt Rhett T. Cooper
1CEVG, Barksdale AFB

Recently, several units have called the Instrument Division asking basically the same questions. For whatever reasons this confusion exists, we felt it appropriate to cover these potential problem areas in detail. As always, a little review doesn't hurt anyone and may be that added margin of safety needed during the next mission.

One of the most asked questions of late concerns the term, "At Pilot's Discretion." In other words, an ATC option to perform a particular flight maneuver. Specifically, what guidelines should we follow when climbing or descending at pilot's discretion. Well, let's go back a bit and look at what proper adherence to clearance means first.

When an air traffic clearance has been obtained under either visual or instrument flight rules, the pilot in command of the aircraft shall not deviate, in any manner, from these instructions unless an amended clearance is obtained. In short, fly the clearance ATC issued without deviation. Inflight, if ATC issued amended instructions, we are expected to comply totally upon receipt. Occasionally the word "immediately" is included in a clearance. This is to imply urgency of an imminent conflict and expeditious compliance by the pilot is **expected** and **necessary** for safety! Now, when the term "At Pilot's Discretion" is included in altitude information of an ATC clearance, the pilot has been given the option to start the climb or descent whenever he/she wishes. Additionally, the climb or descent may be at any rate we choose and we may temporarily level off at any intermediate altitude we desire. Remember though, once we vacate an altitude, we may not return to that altitude, (i.e., if descending, keep descending or level off, but never climb). The real "gotcha" here is when ATC has not used the term "At Pilot's Discretion." If the term is not used and ATC has not imposed any climb or descent restrictions, we are expected to initiate climb or descent promptly on acknowledgement of the clearance. Furthermore, we are expected to climb or descend at a rate consistent with the operating characteristics of the aircraft to 1,000 feet above or below the assigned altitude and then attempt to climb or descend at a rate of 500 feet per minute until the assigned altitude is reached. If we are not able to climb or descend at the minimum rate of 500 feet per minute, advise ATC. To cover this requirement simply apply AFM 51-37, **Instrument Flying** procedures for constant speed/rate climbs and descents, and all will be fine. Another common item that often comes up when discussing this subject con-

BIG INSTRUMENT

cerns leveling off or reducing our rate of descent at 10,000 feet MSL to achieve 250 KIAS. A call to ATC is not required. Controllers anticipate this action and plan accordingly. The same applies prior to entering an airport traffic area. The planning factor which pilots need to consider is that leveling off at any other time during a climb or descent may seriously affect traffic flow and more importantly, create a safety hazard. There is one more point that must be covered. If the altitude information of an ATC descent clearance includes a provision to "cross (fix) at or at or above/below (altitude)," how do we accomplish the descent? This one is easy. The manner in which the pilot executes the descent to comply with the crossing altitude is automatically "At Pilot's Discretion." However, this authorization only applies to that portion of the flight to which the crossing altitude restriction applies. After which, we are to descend in the normal manner. If you desire to look at some examples of these clearances, the Airman's Information Manual (AIM), paragraph 270, has several.

There seem to be some questions as to the services provided by Departure Control and why our departures are sometimes delayed since we would not accept takeoff clearance to the non-optimum runway (i.e., preferred to accomplish a headwind takeoff). Well, a quick look at "Departure Control" and their job responsibilities will clear this confusion.

Departure Control is an **approach control** function responsible for ensuring separation between departing aircraft. Many times in an effort to expedite handling of traffic, Departure Control may suggest a takeoff direction other than that which may have been used under VFR handling. Often, it is preferred to offer the pilot a runway that will require the fewest turns after takeoff in order to place the pilot on his/her filed course or selected departure route as quickly as possible. At many locations particular attention is paid to the use of preferential runways for local noise abatement programs and route departures away from congested areas. Actually, Departure Control is trying its best to assist the pilot in every way possible and to keep us safe and out of trouble. However, we must insure this assistance is not detrimental to our own best interests. For instance, when flying into a strange field, we may observe the majority of the departures in a direction not suitable to our mission aircraft or regulations. We should then inform the appropriate agency of our departure desires as early as possible.

Frequently, when departing a base, we receive a vector heading to follow immediately after takeoff.

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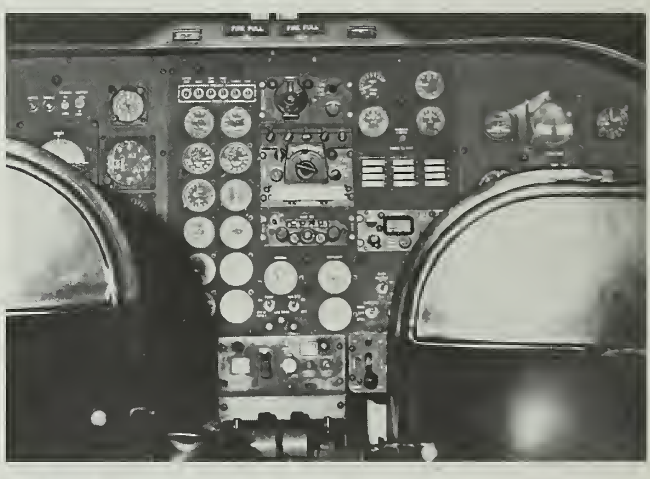
"Perfect Practice Makes Perfect"

Major Jerry Tilly
Capt Ken Sprague
93 BMW Castle AFB

Precision instrument flying in an overpopulated IFR environment has become increasingly important over the years. The importance centers on each pilot's ability to feel confident that he can control an aircraft under all instrument conditions, from takeoff to returning that aircraft safely to the runway. Accomplishing this sometimes taxing mission is a very rewarding, prideful experience. To do our best as instrument pilots it is necessary to remain aware of all instrument procedures. This is not easy with all the additional tasks that an Air Force officer must accomplish. For safety's sake, it must become our primary task. We sometimes get locked into flying the same approaches on each mission without really thinking about instrument procedures. For example, is there still a procedure that requires us to time in VOR holding for 1 minute below 14,000 feet? Or is it at or below 14,000 feet? Which way do we turn in a non-standard holding pattern?

To remain proficient it is necessary to practice. But mere practice is not enough. The successful football coach, Mr. Lombardi, once stated, "Practice does not make perfect; Perfect practice makes perfect." The basic truth in this statement cannot be overlooked. It is up to each pilot to know the basics and practice them if the mission is to be accomplished safely and in accordance with established procedures. The opportunity for "perfect practice" is afforded students attending SAC's Combat Crew Training School (CCTS) at Castle AFB, California, in the form of nine civilian instructors and four T-40 training devices.

This unique program began at Castle AFB in 1973, with two T-40 trainers, and has continued to grow. Over the years the number of trainers has increased by 100%, with the last one becoming operational in 1979. The four trainers have provided instrument practice for over 6200 pilots. All CCTS and Central Flight Instructor Course student pilots are required to fly T-40 missions to practice basic instruments. The vast majority of the students volunteer for extra missions in the T-40s, flying the unique training missions which have been developed by some of SAC's finest instructors. Mr. Sam Fleming, the chief of the T-40 section, has provided the motivation and the expertise that has changed the "nice to have" T-40 flight trainers into an educational experience. In fact, the T-40 is such a good instrument trainer that the 924 Air Refueling Squadron, stationed at Castle, has a requirement for its pilots to fly a minimum of three T-40s per quarter.


T-40 cockpit

The use of sound instructional procedures is the basis of Castle's T-40 success story. The T-40 personnel have had exceptional training in their primary task of instrument instruction. Two of the instructors have their FAA instrument flight instructor's rating. The other personnel are FAA certified as instrument ground instructors. In addition, all nine personnel attend SAC's annual instrument refresher course.

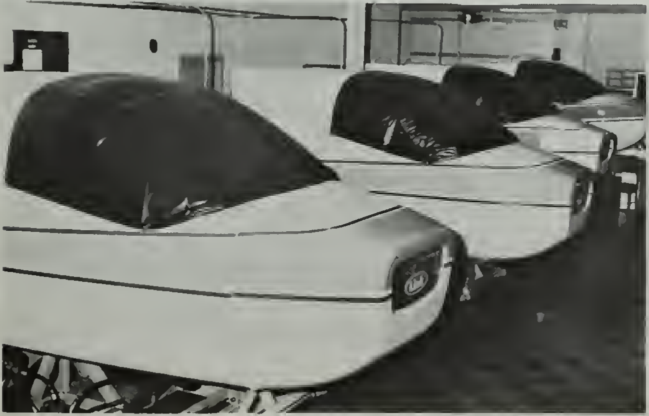
The T-40 trainer has four degrees of motion with no visual presentation. Twenty-one of the units were constructed for the Air Force as ground simulators for the T-39 aircraft. The two place cockpit is ideal for SAC crew members to become familiar with crew coordination as well as practice basic instruments.

Mr. Merv Sunderland at the T-40 instructor console.

As certified electronics experts, the T-40 personnel maintain their trainers in an exceptional manner. No mission has been cancelled for maintenance in the last two years. Additionally, all computer programming is done within the shop, which allows pilots the option of practicing instrument procedures for any military or civilian airfield in the Continental US. Programs have been developed for overseas bases at Mildenhall, Anderson, Hickam and Kadena. All programs can be changed in seconds, thus providing maximum use of time.

The T-40 has become an important part of the CCTS curriculum. Critiques from every graduating class at the CCTS include comments like "T-40 instructors are outstanding" and "best instrument flying program I have seen." It is easy to understand why the T-40 section receives "excellents" and "outstandings" on all Inspector General and CEVG evaluations.

Castle's T-40



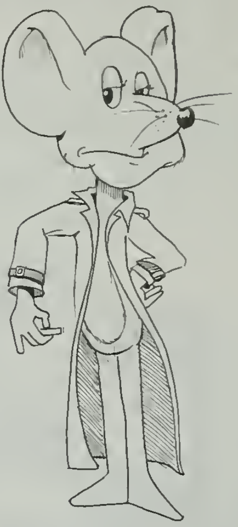
Because of the demonstrated excellence of the device, an annual instrument refresher program which includes three trainer missions, has been developed by the Castle standardization/evaluation division at the direction of Castle's Curriculum Review Board. The purpose of this program is to fine tune the instrument instruction capabilities of Castle's own instructor pilots. Eventually, we hope that SAC will adopt this outline as a permanent addition to the Annual Instrument Refresher Course for all its pilots. Two SAC units, that have recently acquired T-40 trainers, have contacted Mr. Fleming for programming and initial installation assistance.

Left — Mr. Sam Fleming, Castle T-40 section chief. Right Foreground — 1st Lt Steve Mathews, 9th AREFS Beale AFB, CA, AFT 2nd Lt. Richard Malon, 349th AREFS, Beal AFB, CA.

The need for ground instrument simulation is becoming more evident throughout the Air Force for two very important reasons. First, with the training device located on the ground, there is an obvious increased safety factor. Secondly, with the continued increase in the cost of jet fuel, the cost effectiveness of simulation has far reaching effects. It is precisely for these reasons that the T-40 trainer is so important. After comparing the operating costs of the T-40 trainer (about $50/hour) to the operating costs of a KC-135 or B-52 aircraft (about $4000/hour), the value of simulation becomes even more evident.

Simulation is only a worthwhile venture providing that the programs and instructors are of the highest caliber. This high caliber has been identified time after time in the world of Castle's T-40 training section. The instructors continually emphasize that knowing the fundamentals and practicing them are the keys to perfection.

WHAT A COPILOT!



A-NON-A-MOUSE

Welcome to the wonderful world of Copiloting. No longer will you have to squeeze yourself into the cramped cockpit of a T-38; you'll fly an airplane big enough for you, your wife and kids, the dog, and all your friends. You won't get tired from pulling all those G's in extended trail or get a cramped neck flying formation; instead you'll sit on thickly padded seats with a john to use on those long overwater flights. Best of all you won't have to think any more; you'll be just the "Co" pilot, not the "real" pilot. You'll be a flying secretary, figuring takeoff data and fuel logs, accomplishing engine data sheets and communication logs. Your boom operator will take care of the refueling; the navigator will get you to the AR track and back again; the pilot will make sure the plane is flown properly while you will just sit back and watch.

Depending on your motivation when you complete your training at Castle, you may consider the above paragraph an apt description of your responsibilities; for the sake of your crew, hopefully, it is not. Your responsibilities are nothing less than being the pilot in the right seat. You may not have the flying experience of your AC, but you have access to the same Dash-1 and associated directives; you should be acquiring the same knowledge your AC has as fast as you can. When the pilot says, "Co, you got it," you should be prepared to accomplish whatever phase of flight you are in. If you ride along as baggage in the right seat, waiting for the pilot to tell you what to do and when and how to do it, you could be a copilot for a long long time.

To keep your crew from thinking you are a B-4 bag (whether you have the personality of one or not) you must know not only what you are doing, but what everyone else is supposed to be doing as well. Do not assume that no one on your crew will make mistakes. Compare the Boom's gross weight figures with what you think they should be; if they are different, find out which of you is wrong and why. When the Nav hands you the Form 200, look over the entire form, not just what is required to make the fuel log entries. Are the points the same as filed on the 175; are the altitudes what you expect; are the airspeeds less than Best Range Mach? Inflight, back up the Nav with your own fix-to-fix computations. Make sure the Nav knows when you receive a clearance change. When it is time to start the enroute descent, figure out what descent rate you need and if the pilot is flying at a different rate, find out why. Maybe a miscalculation led to a technique that is different from yours. That is worth evaluating. Chair fly your missions like you used to do at UPT; know what to expect and what you should be doing at various times of the flight.

The list of what a good copilot can do to improve comes down to being aware of what is going on around you and having the knowledge to take the appropriate actions. Talk with your AC. What did they do as copilots that made their crew run smoothly. Try to jump on a flight as an extra copilot just to see how another crew runs and how another copilot does the same job that you do. Learn from the experiences of your AC, other ACs, and other copilots and combine this with a study of your aircraft systems and procedures. This effort can transform you from someone who keeps the right seat warm to a valuable crewmember and a step closer to aircraft commander.

PROJECT FALCON

A special handbook is available for officers who are interested in an assignment to the United States Air Force Academy.

The USAF Academy Assignment Opportunities Handbook: Project Falcon, is designed to introduce officers to the Academy, its living and working environment, the mission, job positions and the rewards of an Academy tour.

"To produce the best graduates, we need dedicated officers with outstanding military and academic records to serve on the faculty and staff," said Captain Richard H. Schornstein, chief, Personnel Resources and Training Division. "Academy duty is highly rewarding and career enhancing, and we have a continuing need for officers to fill many positions. An Academy assignment is demanding, but officers who are looking for a challenge and the opportunity to shape future officers, should look to the Academy."

The handbook offers general descriptions of major mission elements at the Academy, positions available, and qualifications required. It also contains detailed information about the Academy's history, facilities, services and nearby Colorado Springs area. Application instructions are included. The handbook is available at your local CBPO.

Big I

Continued from page 15

Normally, we are advised of this initial heading prior to takeoff but may not be advised of the purpose of the heading. As we can see from earlier discussion, the vector is probably for one or two reasons; either traffic separation or for a more expeditious interception of desired routing. Regardless of the reason, pilots operating in a radar environment are expected to integrate departure headings/vectors with their planned route of flight. We must fly the heading/vector without deviation.

Several units have raised questions about pilot/controller responsibilities when executing a visual approach. Apparently, the "Big I" article in October's issue of *Combat Crew* got a few guys in the books. In that article, we discussed visual approaches in general and recommended the AIM be reviewed for additional guidance. However, several areas concerning the maneuver still puzzle folks so maybe the following will enlighten us a little more.

There are several conditions that must exist in order for the controller to issue clearance for a visual approach. First, for the controller, a ceiling of at least 500 feet above minimum vectoring altitude and visibility above three miles is mandatory. Second, the pilot must confirm the airfield is in sight prior to receiving clearance for visual approach. Third, if there is another aircraft being sequenced ahead for landing, we must report that aircraft in sight. Now, with those conditions filled, we can be issued clearance to execute the visual approach. As perhaps implied in the October article, clearance for a visual approach is not clearance for the published ILS. When cleared for a visual approach you are expected to proceed direct to the final approach course and thus to the airport. What we meant before was if a segment of the ILS approach is intercepted when proceeding to the final approach course, it is encouraged the ILS be used as a backup. Common sense dictates we use everything available to make the job easy and **safe** when flying airplanes. Also, adequate separation from other IFR aircraft is provided by controllers but we must maintain separation with the preceding aircraft. If at any time the preceding aircraft is lost from our field of vision, we must inform the controlling agency. As always, adequate knowledge of the maneuver and good preplanning will make this and other inflight activities a breeze.

Hopefully, the information covered in this article will serve as good review in three of the many areas that make up instrument flying. As always, your Instrument Division is anxious to answer questions or just talk "instruments" whenever you like. Feel free to call: Autovon 781-3648.

ICBM Training

Continued from page 13

late the wing's position on matters before the conference. Since this was a working conference, conferees were encouraged to be prepared the first day to discuss the agenda items. Senior instructor evaluators from each 4315CCTS training section participated as members of the working groups.

A steering committee of Hq SAC and NAF personnel monitored the progress of the conference. The committee reviewed all conference activities and was the final authority on matters pertaining to working groups, agenda items and work schedules. Chairpersons briefed the committee daily.

Some topics discussed by the staff officer working group were alternate battle staff training, establishment of a formal instructor course at 4315CCTS, unit conducted initial staff officer training, the role of squadron commanders and sector commanders in the training effort, and the effectiveness of IQT versus ORT. In the IQT working group, subjects studied were the feasibility of screening IQT students, codes training at IQT, teaching local procedures at IQT, collateral training, the possibility of extending IQT, section IV checklists, training security procedures, CPO times, timeliness of tech data changes and correlating MPT performance to written tests. The recurring training working group discussed many topics including scenario training and its relationship to training and evaluation, local standboards for MROS/transitioning deputies, unit orientation/certification process, increased manning levels for DOV/DOT, impact of growing number of directives/regulations on training, standardized training programs produced by 4315CCTS, recurring training for non-mission ready crewmembers awaiting security clearances, and the possibility of a proficiency exam in conjunction with yearly MPT evaluations. Numerous recommendations were formulated and presented to the steering committee. Hq SAC/DOMM is now reviewing all recommendations.

Three guest educators made presentations. Dr Jim Collins discussed stress and how it affects the military educator. He has an extensive background in conducting workshops in industry, government and education. Dr Collins conducted an optional workshop on stress management for military members. This session demonstrated methods to improve instructor-student relations while emphasizing ways to improve learning outcomes. Dr. Robert Mager conducted a seminar on ways educators can trouble-shoot their current training programs. Dr Mager serves as a consultant to industry and government on human performance problems. His specialities are performance problem solving, instructional design, development and implementation. Dr Daniel Brown gave an entertaining and enlightening presentation on instructional systems development concepts and programs. Dr Brown is the Curriculum Advisor to the Commandant, Academic Instructor/Foreign Officer School at Air University, Maxwell AFB, Alabama. Conferees attending these seminars received valuable information on ways to improve their training programs.

Five commercial companies set up displays during the conference. One display demonstrated the capabilities of a video disc player and computer responder for programmed learning instruction. A second company demonstrated a system for computer assisted instruction. New overhead projectors and graphics generating devices were demonstrated. Computer Assisted Televised Instruction was demonstrated. Specific components of the system included a computer, computer disc driver, videotape player, television monitor, and interface card. Personnel from the 4315th CCTS Audiovisual Section set up and presented videotape training products. Their presentation demonstrated the quality of instruction provided by this medium. These contemporary displays provided conferees insight into the types of equipment available on the commercial market for training personnel.

On the final day of the conference, WISM and CPO Working Groups met. These working groups, led by 4315CCTS Curriculum Management personnel, reviewed pertinent areas of concern, i.e. the role of the WISM and CPO standards. Staff officers met with Colonel Ronald Nanning, Hq SAC/DOM. After lunch, working group chairpersons presented their reports to the steering committee. Once these reports were accomplished, final minutes and recommendations were published with conferees receiving copies of the final report. In the evening, Colonel Robert Roetcisoender, Vice Commander, 1st Strategic Aerospace Division, was the guest speaker at the closing dinner.

Many recommendations and ideas were generated that will impact future SAC ICBM training standards and requirements. The future course of SAC ICBM training was positively influenced by these efforts. The first SAC ICBM Training Conference was a success.

USAF Safety Award Recipients for 1981

FLIGHT SAFETY PLAQUES

93d Bombardment Wing
410th Bombardment Wing
379th Bombardment Wing
5th Bombardment Wing
55th Strategic Reconnaissance Wing
157th Air Refueling Group (ANG)

MISSILE SAFETY PLAQUES

28th Bombardment Wing
91st Strategic Missile Wing
320th Bombardment Wing
351st Strategic Missile Wing
390th Strategic Missile Wing
410th Bombardment Wing

NUCLEAR SURETY PLAQUES

44th Strategic Missile Wing
92d Bombardment Wing
308th Strategic Missile Wing
379th Bombardment Wing

EXPLOSIVES SAFETY PLAQUES

1 Strategic Aerospace Division
319th Bombardment Wing

19th Bombardment Wing, Robins AFB, Crew E-21: P Captain Ronald L. Cavendish, CP Lt Colonel Harry A. Stafford, INB Captain Ronald D. Nass, NN 1Lt James D. Gray, INE Captain George W. Steele, Jr., IAG TSgt Timothy J. Randall

Flying Crew

Crew E-21, 19th BMW, Robins AFB, was scheduled for air refueling, low level, cell navigation and transition. Approximately 100 nm from Atlanta, they were cleared and began a descent out of FL 370, when the crew discovered they had no electrical or manual control of the stabilizer trim. They continued their descent to 3000 MSL and set up a box pattern over the base while the wing staff, 8th AF and Boeing were consulted. After consultation the decision was made to configure for a flaps down, airbrakes two approach and landing. The stabilizer trim was stuck at 2.0 nose down trim. Fuel at the time was: External and outboard tanks full, one and four main tanks 12,000 pounds, two and three main tanks 18,000 pounds, all other tanks empty. The stabilizer trim cut-out switch was placed in the cutout position as a precautionary measure. When the crew reached the fuel sequence of feeding mains one and four from outboard wing tanks, they lowered the flaps in 10 degree increments to counteract the trim requirements. Gear was lowered after flaps reached full down position to counteract the requirements of forward pressure on the control column, and the crew flew an ILS approach to an uneventful landing.

PROFESSIONAL

Flight Maintenance Airman

SSgt Dale L. Sweger, 7th MMS, Carswell AFB, is SAC Maintenance Airman of the Month. Sgt Sweger has continuously displayed managerial attributes normally associated with those of much senior NCOs. His outstanding performance, his keen sense of responsibility and sincere desire to provide the best possible support for the wing mission enabled him to make significant contributions towards the overall mission of this command. Sgt Sweger is a dedicated NCO and a valuable asset to the SAC maintenance effort and the United States Air Force.

Missile Crew

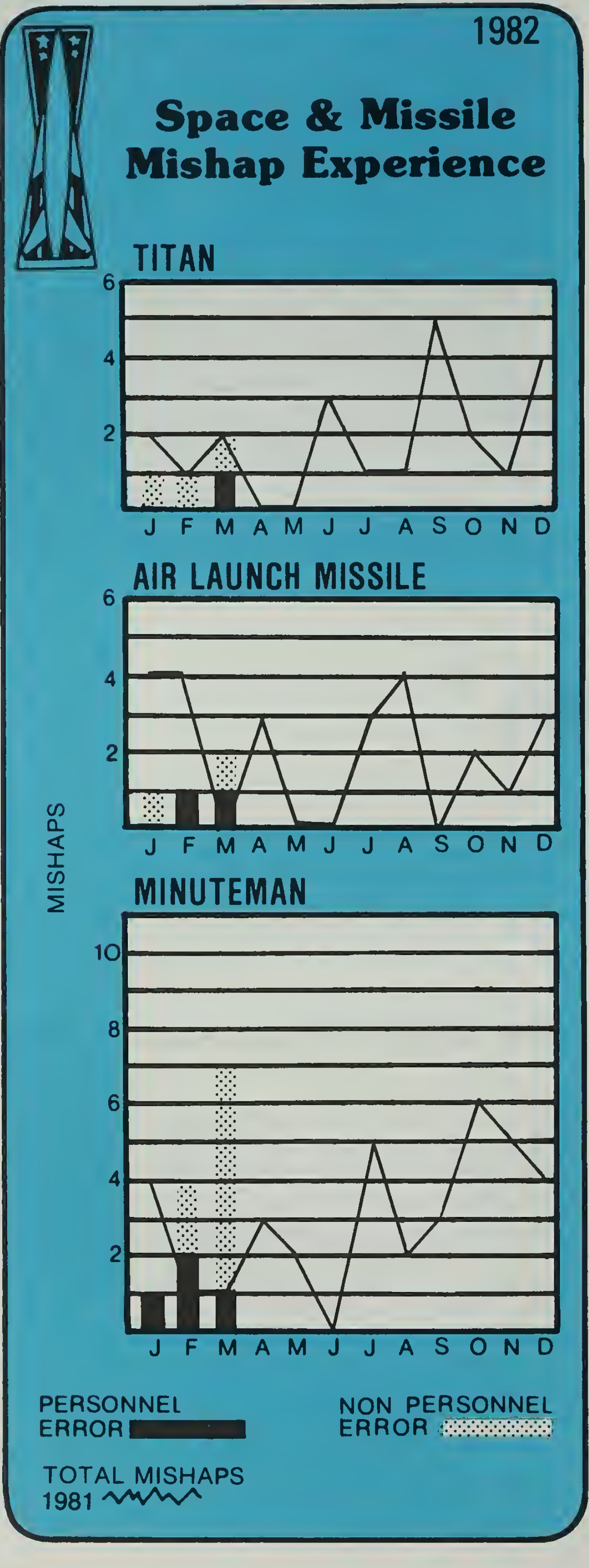
Crew E-020, 341st SMW, 1Lt Freddie J. McLean, MCCC, and 2Lt James A. Nugent, DMCCC, is SAC Crew of the Month. They assumed alert at Bravo Launch Control Center with the LCC operating on emergency power due to ongoing electrical maintenance on the Radio Frequency Interference box. The capsule was also leaning in an exaggerated tilt due to failure of two LCC shock isolators, making movement within the LCC difficult. The crew monitored the maintenance activity until completion, then coordinated with the team which returned primary power to the LCC. A short time later, the crew noticed an acrid smell coming from the capsule's comfort heater. Recognizing an overheat condition, they isolated the potential fire by turning the electric heater switch off, alerted Wing Maintenance Job Control, and reported the incident to the Wing Command Post. The crew maintained vigilance for additional fire problems because of a lingering smell of burning rubber. Soon, the distinct pungent odor of an electrical fire became evident, and they discovered smoke in the overhead fluorescent light fixtures. They isolated the fire by opening the circuit breaker and the smoke dissipated. Still, the overhead lights began to glow even though electrically isolated and heavy white smoke bellowed out making it difficult for the crewmembers to see and breathe. They coordinated closely with Job Control and the Command Post and decided to completely shut down the capsule. With the situation becoming increasingly perilous, the crew considered emergency evacuation, but elected to continue checklist actions. They promptly transferred total flight responsibility to another LCC. They then accomplished shut down which electrically isolated the equipment racks to prevent serious damage and removed all power from the LCC motor generator. The shut down actions significantly reduced the smoke discharge in the capsule making evacuation unnecessary. The crew's immediate and professional response to these complicated emergencies prevented injuries to themselves and damage to equipment.

PERFORMERS

ICBM Maintenance Airman

SSgt Patricia A. Dupuis, 351st OMMS, Whiteman AFB, is ICBM Maintenance Airman of the Month. Her duties include supervision of the removal and emplacement of Minuteman II, LGM 30F Weapon System Missile Guidance Sets, Penetration Aids, and War Reserve Reentry Vehicles. During her team's daily handling of critical nuclear components and equipment, Sgt Dupuis has maintained a flawless safety, security and QC evaluation record. Since graduation from formal qualification training, she has achieved two Highly Qualified and nine Qualified ratings on the 11 tasks evaluated by the Wing Quality Control Division. Sgt Dupuis' outstanding professionalism is commendable.

Space & Missile Mishap Experience



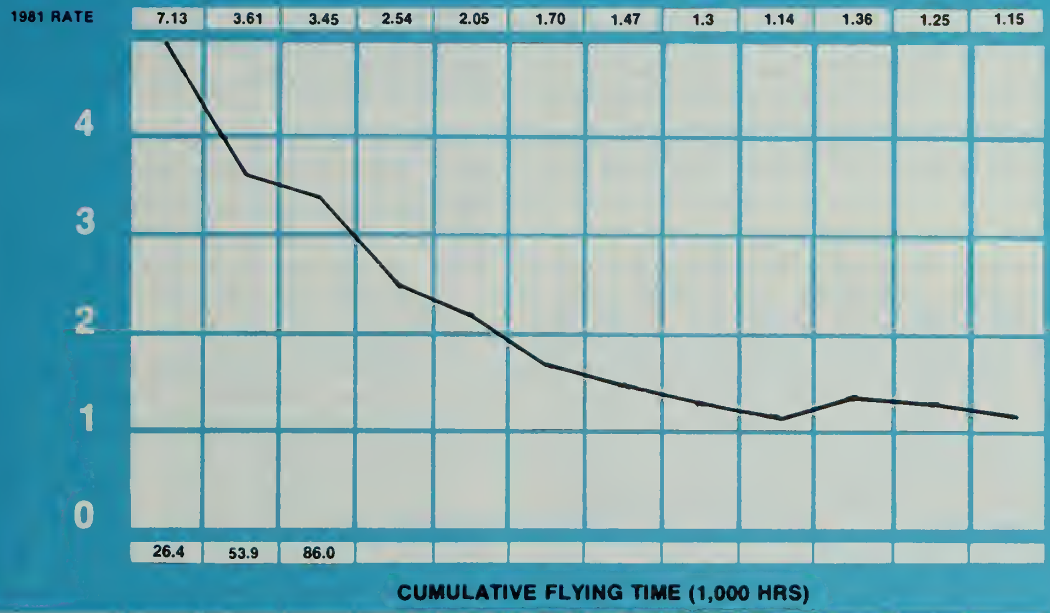
Aircrew Life Support NCO of the Year

MSgt Kenneth Hampton is named the Outstanding Strategic Air Command Aircrew Life Support NCO of the Year. A 15-year veteran of the Air Force, he is a dedicated professional who is both people and mission oriented.

According to Col Eugene A. Moore, deputy commander for operations, Grissom AFB, he has justly earned the respect and admiration of superiors, peers and subordinates." As superintendent of the wing and base aircrew life support, Sgt Hampton is responsible for all aircrew personnel and life support technical training. He has established several training programs which have enhanced the versatility of technicians and which also pay positive dividends.

1982 Flying Safety Rate

SAC CLASS A MISHAP RATE (PER 100,000 FLYING HRS)



MISHAPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1981	2	0	1	0	0	0	0	0	0	1	0	0
1982	0	0	0									

1982 SUBORDINATE CMD RATES

MISHAP STATUS

+KC-135A	MAR 82
+KC-135A	MAR 82

LEGEND ⁄\ = 1981 RATE (SAC)

See . . .

Continued from page 7

Crop dusters were encountered along IR 122 in Tennessee and IR 60 in Georgia. In both cases, the low level military route was known by the civilian operators but this did not seem to distract them from their dusting activities. After one of the incidents, involving one of at least three bi-planes at 600 feet AGL, the nearest public affairs office received two complaints about the Air Force's low level flying activity.

The altitude at which the near misses occurred was quite consistent. With the exception of two incidents wherein the altitude was not reported the near misses occurred between the surface and 5,000 feet AGL. (Fig 2)

NMAC Altitude — AGL

Altitude	No.	%
Surface — 500 ft	1	3
500-1000 ft	13	40
2000-3000 ft	5	15
3000-4000 ft	4	12
4000-5000 ft	5	15
not reported	2	6
	33	

Figure 2

The identity of the pilot of the second aircraft was established in only five of the cases (15%) and three of the five were military pilots. The estimated miss distance reported by the B-52 aircrew varied from 50 to 500 feet. Figure 3 shows the distance reported between the two aircraft at the time of the near miss.

Miss Distance

Feet	No.	%
50-100	5	15
100-200	10	30
200-300	6	8
300-500	12	37
	33	

Figure 3

Further research revealed that several of the near misses were somewhat geographically related. IR routes on which near midair collisions occurred are listed in Figure 4.

Near Misses Reported on IR Routes

IR 60 -4
IR 22 -3
IR 153-1
IR 177-1
IR 276-5
IR 300-4
IR 401-2
IR 402 - 1
IR 444 - 2
IR 499 - 1
IR 501 - 1
IR 502 - 4
IR 599 - 3
IR 601 - 1

Figure 4

After all of this information is digested, it seems we come down to two basic separation concepts that need improvement in order to reduce or at least minimize the midair collision threat. Until there is a dramatic change to the current system these basic concepts are see and avoid and traffic separation techniques.

The see and avoid concept includes paint schemes, flood lights, rotating beacons, strobe lights, proximity warning indicators and airborne collision avoidance systems.

The traffic separation concept involves improvement in airways, communications and navigation facilities, IFR plans, scheduling, radar control areas, vectoring, standard instrument departures (SID), radar beacons . . . altitude encoding, automated conflict resolution, military operating areas, and restricted areas and ranges.

One other traffic separation technique is to rigidly segregate and control IFR and VFR traffic. Although this is already being done in the PCA, extensions of this separation technique are often suggested as a means of further reducing midair collision potential. Although this would undoubtedly reduce the potential, there certainly are associated problems. The main problem in making this work is the belief by United States citizens that they should be able to use currently available air space. Further restriction of or infringement on this right is bound to be vigorously resisted and very difficult to impose.

Over the years, various methods have been tried to enhance the ability of pilots to avoid each other — visual enhancement methods, better search methods, traffic advisories, proximity warning devices, and even airborne collision avoidance systems — these will continue to be explored. Your best insurance against a mid air collision, however, will remain ***See and be Seen.***

SAC SAFETY SCREEN

917 AREFS, Dyess Crew E-121: IP Capt Onesimo (Juan) Solis Jr, CP 1Lt John A MacLellan, IN Capt William H Moore, BO SrA Randolph G Webb

337 BMS, Dyess Crew R-42: P Capt John M Nevins, CP Capt David A Strivers, IB Capt Richard Antinora, NN 1Lt Laddie F Wagner, IE Capt Edward P Grant, AG Sgt Eugene L Hodges III

924 AREFS, Castle Crew R-106: P Capt Kelly S C Hamilton, CP Capt Martin L Read, N 1Lt Gary W Fountaine, BO A1C Harold E Katus

93 AREFS, Castle Instruction Team IT-51: IP Capt James A Studer, IN Capt James S Leland, IBO TSgt Roger D Gossett

320 BMW, Mather Crew E-14: P Capt John A Hurth, CP 1Lt Gary R Edelblute, RN Capt Lonnie D Bowman, N Capt Paul A Pawlikowski, EW 2Lt Kyle J Marx, AG A1C James R Hungate

320 BMW, Mather Crew E-115: P Capt Marc B Stormont, CP Capt Leonard L Oh, N Capt Allen P Wilson, BO SSgt Cleveland Williams

55 SRW, Offutt Crew S-001: IP Major Robert W Roshak, FP Capt Alan C May, IN Capt Gary C Williamson, IFE MSgt John F Vadas

321 SMW, Grand Forks Crew R-035: MCCC Capt Marvin J Riedel, DMCCC 1Lt John V Chaplin, Jr

90 SMW, F E Warren Crew R-165X: MCCC Capt Jeffrey A Thomas, DMCCC 2Lt Allan L. Haensgen

44 SMW, Ellsworth Crew R-182: MCCC Capt James D Horace, DMCCC 2Lt Ronnie L Robinson

390 SMW, Davis—Monthan Crew R-163: MCCC Capt Richard W Lemp, DMCCC Lt Dennis S Reimer, MSAT A1C Michael A Roa, MFT A1C Vernon P Wilson

351 SMW, Whiteman Crew E-060: MCCC Capt Raymond D Burrell, DMCCC 1Lt Mitchell S Persons

308 SMW, Little Rock Crew R-124: MCCC 1Lt Walter Mathis, DMCCC 2Lt James L Daniel, MSAT Sgt Gregory J Mirabilli, MFT A1C Michael T Brown

62 BMS, Barksdale Crew E-08: P Capt Tony Imondi, CP 1Lt Greg Sartor, RN Capt Jose Negron, N 1Lt Keith Bilyeu, EW Capt Paul Wurdack, AG SSgt Bob Moehring

596 BMW, Barksdale Crew R-64: P Capt Bill Hanson, CP 1Lt Ed Pearson, RN Capt Rich Lumpkin, N Capt Jackie Martin, EW 1Lt Gordy George, G Sgt Alan Turney

71 AREFS, Barksdale Crew R-116: P Capt John T LeBlanc, CP 1Lt John C Ellwanger, N 1Lt Grover M Trask, BO Sgt William R Mendenhall

32 AREFS, Barksdale Crew (KC-10): P Maj Charles E Baily, CP Capt James D Rorabaugh, BO MSgt Jack Patton, FE MSgt Charles T Large

7 AREFS, Carswell Crew E-114: P Capt Ricky J Keyes, CP 1Lt Mark A Volk, N 1Lt Robert G Smith, BO SSgt Michael A Sedillo

9 BMS, Carswell Crew E-82: P Capt Stephen D Harper, CP Capt Donald E Coffey Jr, RN Capt Dan A Day, N Capt John R Coppedge, EWO Capt Joel D David, G A1C Luke S Shelton

20 BMS, Carswell Crew E-33: P Capt Luther S Martin, CP Capt James E Rowland, RN Capt Charles H Thomas Jr, N 1Lt Richard A Palmer Jr, EWO 1Lt Paul M Goodman, G SrA Dean A Summers

4018 CCTS (IT-1), Carswell: IP Maj John R Miller, IRN Capt Weldon L Schorp Jr, IEWO Capt Robert J Walsh, IG TSgt Daniel C Watkins

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW AFR 127-2/SS1.*

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